**UNITED STATES DEPARTMENT OF COMMERCE**
**National Oceanic and Atmospheric Administration**
NATIONAL MARINE FISHERIES SERVICE
525 NE Oregon Street
PORTLAND, OREGON 97232-2737

December 11, 2003

MEMORANDUM FOR: D. Robert Lohn
Regional Administrator

FROM: Robert G. Walton, Assistant Regional Administrator
Salmon Recovery Division

Subject: Fisheries Management and Evaluation Plans (FMEPs) submitted by the Washington Department of Fish and Wildlife and the Oregon Department of Fish and Wildlife For Recreational Fisheries in Tributaries to the Lower Columbia River Affecting Lower Columbia River Chinook Salmon, Lower Columbia River Steelhead, and Columbia River Chum Salmon ESUs Under Limit 4 of the Endangered Species Act 4(d) Rule (50 CFR 223.203(b)(4))(65 FR 42422, July 10, 2000) - DECISION MEMORANDUM

**NATIONAL MARINE FISHERIES SERVICE TRACKING NUMBERS:** NWR/4d/04/2001/006
NWR/4d/04/2001/007
NWR/4d/04/2001/011
NWR/4d/04/2001/012
NWR/4d/04/2001/014

**PURPOSE**

The Washington Department of Fish and Wildlife (WDFW) and Oregon Department of Fish and Wildlife (ODFW) have submitted five Fishery Management and Evaluation Plans (FMEPs) for review and determination by NOAA's National Marine Fisheries Service (NMFS) under Limit 4 of the Endangered Species Act (ESA) 4(d) Rule (50 CFR 223.203(b)(4))(65 FR 42422, July 10, 2000). The WDFW submitted one FMEP and the ODFW submitted four FMEPs for recreational fisheries actions in the tributaries to the Columbia River from the Wind River in Washington and the Hood River in Oregon to the Pacific Ocean (excluding fisheries that occur in the Willamette River Basin above Willamette Falls). The fisheries described in the FMEPs will affect the threatened Lower Columbia River (LCR) chinook salmon, LCR steelhead, and Columbia River (CR) chum salmon ESUs. The WDFW submitted one FMEP that addresses fisheries impacts on

all three ESUs, while ODFW has submitted individual FMEPs that address impacts on the separate ESUs.

**RECOMMENDATION**

The NMFS Salmon Recovery Division (SRD) has evaluated the FMEPs, and finds that the FMEPs adequately address all of the criteria established in Limit 4 of the ESA 4(d) Rule. The SRD recommends that the Northwest Regional Administrator approve the FMEPs, with the result that take prohibitions would not apply to fisheries implemented in accordance with the approved FMEPs and NMFS' letters of concurrence.

**BACKGROUND**

Limit 4 of the NMFS' ESA section 4(d) Rule for 14 threatened salmonid ESUs contains a "fisheries harvest activities" limit that provides that the prohibitions of section 9(a)(1) of the ESA do not apply to fisheries harvest activities that adequately address the criteria of that limit and have been approved by NMFS. The FMEPs submitted by the WDFW and ODFW for consideration under limit 4 of the 4(d) Rule are listed in Table 1.

**Table 1. Fisheries management and evaluation plans for fisheries in tributaries to the Lower Columbia River**

| Submitting Agency | Plan |
|---|---|
| Washington Department of Fish and Wildlife | Fisheries Management and Evaluation Plan. Lower Columbia River (WDFW 2003). |
| Oregon Department of Fish and Wildlife | Fisheries Management and Evaluation Plan. Lower Columbia River Chinook Salmon in Oregon Freshwater Fisheries of the Lower Columbia River Mainstem and Tributaries Between the Pacific Ocean and Hood River (ODFW 2003). |
| | Fisheries Management and Evaluation Plan. Lower Columbia River ESU Steelhead, Trout, Sturgeon and Warmwater Fisheries Lower Columbia River Mainstem Tributaries, Lower Willamette River Tributaries, Clackamas River and the Sandy River (ODFW 2001a). |
| | Fisheries Management and Evaluation Plan. Lower Columbia River Chum Salmon in Oregon Freshwater Fisheries of the Lower Columbia River Mainstem and Tributaries Between the Pacific Ocean and Bonneville Dam (ODFW 2001b). |
| | Fisheries Management and Evaluation Plan. Hood River Basin Steelhead, Trout and Salmon Fisheries (ODFW 2000). |

The FMEPs cover fisheries in the tributaries to the Columbia River downstream of and including the Wind River in Washington and the Hood River in Oregon, excluding those fisheries in the Willamette River above Willamette Falls. The FMEPs exclude those mainstem Columbia River fisheries managed under *U.S. v. Oregon* and ocean fisheries that may encounter fish from the

LCR ESUs, although effects of those fisheries are considered in the FMEPs and in the SRD's evaluation. The mainstem Columbia River fisheries undergo section 7 consultation initiated by the parties to *U.S. v. Oregon*, and the ocean fisheries undergo section 7 consultation initiated by the Pacific Fisheries Management Council (PFMC).

To briefly summarize, the tributary fisheries in the FMEPs primarily target returning hatchery produced salmon and steelhead, but also include fisheries that target non-salmonid species (e.g., sturgeon, warmwater species, smelt). The recreational fisheries employ hook and line fishing methods and may permit either natural bait or artificial lures. Fishing regulations established in the FMEPs regulate the method (e.g., gear, bait, flies only, artificial lures), size limits, bag limits, the areas open to fisheries, timing of the fisheries, and which species can be targeted in the recreational fisheries. All hatchery-produced steelhead, spring chinook salmon, and coho salmon released in the area covered by the FMEPs are externally marked to allow for selective harvest of hatchery produced fish. In areas where naturally produced fish are present, recreational fisheries are managed with the requirement that all unmarked adult salmon and steelhead be released. Only adipose fin-clipped adult salmon and steelhead may be retained in the fisheries. In areas where naturally produced fish are not listed, recreational salmon fisheries can harvest marked and unmarked adult salmon, which are managed to meet hatchery broodstock and natural production escapement goals.

The exceptions to the selective fisheries management regime are the fisheries for tule fall chinook salmon. Only a small portion of the hatchery produced tule fall chinook salmon are externally marked, limiting the potential for selective fisheries. Tributary fisheries for fall chinook salmon are therefore managed to meet escapement goals for naturally produced populations and to meet hatchery broodstock needs. All fishery impacts on LCR tule fall chinook salmon from ocean, mainstem Columbia River and Columbia River tributary fisheries are managed to not exceed a Rebuilding Exploitation Rate (RER) established by NMFS. The RER was developed to provide for the recovery of LCR tule fall chinook salmon when managing ocean fisheries under the PFMC and is also used to manage lower Columbia River mainstem commercial and recreational fisheries. Consistent with this approach, the tributary fisheries will also be managed such that the total RER, including ocean and lower Columbia River mainstem fisheries impacts, will not be exceeded. Tributary fisheries proposed in the FMEPs can be open all year, but tend to be closed both seasonally and by area to protect non-target natural spawning populations and out-migrating juvenile salmon and steelhead. All fisheries are described in detail within the FMEPs and in the SRD's evaluations of the FMEPs (Attachments 1-5).

The FMEPs also provide details on monitoring and evaluation activities that are designed to measure the status of listed populations within the management areas and measure harvest and fisheries. The monitoring and evaluation information will be provided to NMFS in annual reports and the FMEPs will be evaluated every five years to determine if objectives are being accomplished. The FMEPs also describe the level of take anticipated. NMFS' evaluation of the

FMEPs for compliance with ESA 4(d) Rule Limit 4 criteria provides further discussion of the proposed harvest activities (see Attachments 1-5).

**DISCUSSION**

*Controversial Issues*

There is no known litigation or potential litigation associated directly with these FMEPs. However, litigation under *U.S. v. Oregon* may affect the proposed tributary fisheries.

**Public Review and Comment**

NMFS published notices in the Federal Register of the availability for the FMEPs for public review and comment (Table 2).

Table 2. Federal Register Notices notifying availability of FMEPs for public comment.

| Fisheries Management Evaluation Plan | Date comment period closed |
|---|---|
| Fisheries Management and Evaluation Plan. Lower Columbia River (WDFW 2003). | June 28, 2001 |
| Fisheries Management and Evaluation Plan. Lower Columbia River Chinook Salmon in Oregon Freshwater Fisheries of the Lower Columbia River Mainstem and Tributaries Between the Pacific Ocean and Hood River (ODFW 2003). | June 28, 2001 |
| Fisheries Management and Evaluation Plan. Lower Columbia River ESU Steelhead, Trout, Sturgeon and Warmwater Fisheries Lower Columbia River Mainstem Tributaries, Lower Willamette River Tributaries, Clackamas River and the Sandy River (ODFW 2001a). | June 4, 2001 |
| Fisheries Management and Evaluation Plan. Lower Columbia River Chum Salmon in Oregon Freshwater Fisheries of the Lower Columbia River Mainstem and Tributaries Between the Pacific Ocean and Bonneville Dam (ODFW 2001b). | October 12, 2001 |
| Fisheries Management and Evaluation Plan. Hood River Basin Steelhead, Trout and Salmon Fisheries (ODFW 2000). | June 4, 2001 |

The SRD has reviewed comments received by the closing dates. NMFS received one comment from the general public regarding ODFW's chinook salmon FMEP. The comment did not raise

issues that required substantive modification of the FMEPs or NMFS' 4(d) and NEPA documents.

The one comment came from the Native Fish Society of Oregon, which identified an issue with chinook fisheries in the Sandy River basin. Their concern was with the potential harmful impacts of the catch and retention of naturally produced fall chinook salmon in the recreational fisheries. Hatchery fall chinook salmon are not released into the basin. Thus all fall chinook salmon are naturally produced and considered listed under the ESA. The ODFW had measures in place to protect naturally spawning populations of fall chinook salmon, including closing the river to salmon fishing after October 31, and closing natural spawning areas to all fishing activities. In consultation regarding this issue, the ODFW changed fishing regulations in the Sandy River basin to require that all unmarked chinook be released unharmed if caught incidental to fisheries targeting hatchery spring chinook salmon, hatchery coho salmon, and hatchery steelhead. In a similar discussion, NMFS has asked ODFW to close the fall chinook salmon fishery in the Hood River to the retention of unmarked fish. The proposed rule change will go into effect in 2004. This will essentially eliminate the potential of harvesting listed fall chinook salmon returning to that basin in legally implemented fisheries.

*Evaluation of the FMEPs under the ESA 4(d) Rule*

Attachments 1-5 are SRD's evaluations of whether or not the FMEPs adequately address all of the requirements established under Limit 4 of the ESA 4(d) Rule for LCR chinook salmon, LCR steelhead, and CR chum salmon. The SRD has determined that the FMEPs provided by the WDFW and ODFW adequately address all of the requirements in Limit 4 of the ESA 4(d) Rule.

*Evaluation of Federal Actions under the ESA Section 7 and the Magnuson-Stevens Act Essential Fish Habitat*

The Federal action germane to evaluation and determination is NMFS' determination of whether or not the plans adequately address ESA 4(d) Rule criteria and qualify for limits on section 9 take prohibitions. The SRD prepared an ESA section 7 biological opinion to evaluate the effects of the actions on the listed LCR salmon and steelhead ESUs (Attachment 6). The SRD also analyzed the effects of the actions on Essential Fish Habitat (EFH) under the Magnuson-Stevens Act, and this is included in the Biological Opinion (see Attachment 6).

Based on the SRD's analysis, including the evaluation of monitoring and evaluation actions implemented through the FMEPs, in the SRD's ESA 4(d) Rule evaluation and determination documents (Attachments 1-5), and the biological opinion (Attachment 6), the proposed Federal action is not likely to jeopardize the continued existence of listed LCR salmon and steelhead. Adequate measures are proposed to minimize the effects of any take.

The SRD further determined that the effects of the action on EFH are likely to be within the ranged of effects considered in the ESA portion of the opinion, and concluded that the proposed actions are not likely to adversely affect Pacific salmon EFH.

*Evaluation of NMFS' Proposed Determination under NEPA*

As NEPA requires, NMFS completed an Environmental Assessment to evaluate the effects on the human environment of its proposed evaluation and determination of whether or not the FMEPs adequately addresses the ESA 4(d) Rule Limit 4 criteria, and therefore qualifies for limitation of take prohibitions. NMFS reviewed the effects of the proposed action on physical, biological, and socioeconomic resources in the EA (Attachment 7). NMFS found that the proposed action would not significantly affect the quality of the human environment (Finding of No Significant Impact, May 22, 2003).

*FMEP Effects on the Likelihood of LCR Chinook Salmon, LCR Steelhead, and CR Chum Salmon Survival and Recovery*

To be consistent with Limit 4(I) of the 4(d) Rule, the Secretary of Commerce (Secretary) must determine pursuant to 50 CFR 223.209 that the fisheries described in the FMEPs will not appreciably reduce the likelihood of survival and recovery of the LCR chinook salmon, LCR steelhead and CR chum salmon ESUs. Biological analyses supporting a determination that the FMEPs will not appreciably reduce the likelihood of survival and recovery of the listed LCR salmon and steelhead ESUs are presented in SRD's evaluation documents (Attachments 1-5) and summarized here.

*FMEP tributary harvest effects*

In the FMEPs, ODFW and WDFW identify the current harvest management regime, which reflects changes in the fisheries prior to and since the listing of the three ESUs.

Fisheries impacts from all tributary fisheries were considerably higher in the past. In steelhead fisheries, for example, mortality in the early 1990s was estimated to be 50% of the naturally produced population. The majority of this mortality was on juvenile steelhead and occurred in fisheries targeting resident trout. The fisheries management regimes described in these FMEPs will reduce fisheries mortalities for adult and juvenile steelhead combined to less than 5% of the natural population – a ninety percent reduction in impacts. Modeling and analysis by ODFW and WDFW have shown that the proposed levels of fisheries mortalities for LCR steelhead are expected to be well below levels that would lead to extinction, with the results showing an almost zero chance of causing extinction in 50 years. NMFS believes that even these modeled levels are conservative (see the discussion in the section 7 biological opinion and in the steelhead ERD documents (Attachments 1, 3, 4, and 6)).

Fisheries impacts on LCR spring chinook salmon have also been reduced. Harvest rates have dropped from an average of 67%, 42%, and 30% for the Lewis, Kalama, and Cowlitz spring chinook salmon tributary fisheries in the late 1990s, respectively, to an expected harvest rate of between 5% and 10% for the fisheries on these populations described in the FMEPs. Harvest rates for the Sandy River spring chinook population are expected to drop from 40% to a range of 4.2% to 6.1% per year. This decrease is due to the shift to selective fisheries, which has only been possible in the action area since 2002, when all returning hatchery spring chinook salmon were externally marked. Modeling of spring chinook salmon populations by ODFW (see ODFW chinook FMEP) and by the PFMC has shown, based on current habitat conditions, that the proposed fisheries impacts are well below those levels that would appreciably reduce the likelihood of survival and recovery of the listed populations. Until habitat conditions improve, additional reductions in the proposed fisheries impacts would not be expected to improve the viability of the spring chinook populations.

LCR bright fall chinook salmon are expected to continue to benefit from the fisheries management actions in the FMEPs. Currently, the Lewis River population of bright fall chinook salmon is managed to meet an escapement goal that has been determined by WDFW to be sustainable (see description in WDFW FMEP). In the Sandy River, the bright fall chinook population is protected by regulations requiring the release of all unmarked salmon and through season and area closures. Tributary fisheries impacts are expected to decline to 2 – 4% for this population.

Fisheries impacts on tule fall chinook salmon stocks are expected to decline under the fishery management detailed in the FMEPs. As described in the biological opinion and in the FMEPs, where hatchery fall chinook salmon are absent, naturally produced tule fall chinook salmon will be protected through season and area closures and through fisheries requiring the release of unmarked chinook salmon. In areas where hatchery fall chinook salmon are present, populations are expected to benefit from fisheries managed to meet hatchery broodstock needs, natural escapement goals, and, through management of the fisheries, not to exceed the Rebuilding Exploitation Rate (RER) for tule fall chinook salmon. The RER was developed by NMFS and the PFMC to manage fisheries impacts in the ocean, mainstem and tributaries fisheries to a level that would provide for the recovery and rebuilding of Columbia River tule fall chinook salmon populations. The RER was reduced from 65% to 49% in 2002. This reduction has benefitted most of the tule fall chinook salmon populations and some have seen even greater reductions through tributary fisheries management actions (see ODFW and WDFW FMEPs). Impacts are expected to decrease as RERs are developed and modified by NMFS during the PFMC ocean salmon season setting process. Fisheries mortalities in the tributary fisheries would be expected to decrease farther when mass marking of hatchery fall chinook is perfected. Mass marking will permit the use of selective fisheries to harvest marked hatchery fall chinook salmon.

Fisheries impacts on chum salmon in the lower Columbia River are expected to be minimal. There are no directed fisheries for chum salmon and the only impacts will come from the catch

and release of chum salmon in fisheries targeting other species. Chum salmon are also protected by regulations requiring the release of all chum salmon and by area closures that protect spawning chum salmon (see Attachments 1 and 5).

As reflected in the information provided above and in the attached ERD documents, recent harvest management changes have substantially reduced the effect of fisheries mortalities (harvest) on listed salmon and steelhead. Modeling exercises by WDFW and ODFW have shown that the proposed fisheries mortality rates for spring chinook and steelhead are well below levels that would contribute to extinction and are essentially zero. For example, ODFW used a quantitative Population Viability Analysis (PVA) in developing a maximum fishery mortality rate of 20% for steelhead populations in Oregon.

ODFW performed a number of PVA model runs for 27 steelhead populations to assess the impact of fisheries mortality on the status and recovery of steelhead in Oregon. The model looked at a range of fisheries mortalities from 0% to 75%. The results were stated in terms of the probability of the population becoming extinct in 50 years at each mortality rate. For most populations the modeling suggested that the probability of extinction was essentially zero as long as fisheries mortality rates remained less than 30%. As mortality rates became greater than 40% the probability of extinction increased dramatically. Furthermore, once the probability of extinction increased beyond 0.05, the transition to an extinction probability of 1.00 was very rapid. In other words, once mortality rates increase sufficiently to cause the probability of extinction to exceed 0.05, any additional mortality would cause a rapid increase in the likelihood of extinction. Because the transition from low to high risk happens so rapidly, there is little room for error (in the model or the measurements of mortality rates). To address this concern, ODFW has set the maximum fisheries mortality limit to 20%. This conservative approach was used to provide a buffer for errors, even though the model results suggested that management under a 40% limit was unlikely to cause extinction.

For LCR steelhead populations in Oregon, the fisheries proposed in the FMEPs will result in fisheries mortalities less than 5%. At these levels, which are well below the conservative management goal of 20%, the model results show that harvest mortality has an almost zero chance of causing extinction in 50 years. Thus, the proposed fisheries management should not appreciably reduce the likelihood of survival and recovery of the listed populations.

Similar modeling exercises where completed by ODFW for spring chinook, by WDFW for steelhead populations in Washington, and by NMFS for tule fall chinook in the LCR ESU. The expected harvest mortality rates that are proposed in the FMEPs are below the conservative maximum fisheries mortality limits, and are at levels that should not appreciably reduce the likelihood of survival and recovery of the listed LCR salmon and steelhead. Furthermore, additional reductions in the tributary fisheries would not be expected to noticeably increase the probability of survival and recovery of the listed fish. Reductions in harvest alone will not be able to recover the LCR salmon and steelhead ESUs, improvements in other areas are needed.

The recovery planning process for the LCR ESUs, that will incorporated recommendations from the subbasin planners and NMFS' Willamette/Lower Columbia Technical Recovery Team, may identify fisheries measures that may require modification of the FMEPs. If these measures do not fall within currently proposed actions, then the FMEP will be resubmitted to NMFS for review and determination.

As described in the FMEPs, WDFW and ODFW have designed monitoring and evaluation activities to measure performance indicators for population status and fisheries impacts. These performance indicators will be monitored and reported to NMFS in an annual report. WDFW and ODFW will also conduct comprehensive reviews of the FMEPs at least every 5 years or as specified in the FMEPs. Fisheries management actions can also be changed as new information is provided by NMFS (through the PFMC process), from the Technical Recovery Teams, and as the result of recovery planning. As stated in the FMEPs, NMFS will be notified by WDFW and ODFW prior to any decisions regarding modifications to fishing regulations. These reporting measures will help ensure that fisheries comply with the management regimes in the FMEPs.

For the above reasons, the SRD recommends a NMFS determination that tributary fishery actions in the WDFW and ODFW FMEPs are not likely to appreciably reduce the likelihood of survival and recovery of the LCR chinook salmon, LCR steelhead, and CR chum salmon ESUs.

*Implementation and Reporting Requirements*

Criterion (iv) of 4(d) Rule Limit 4 requires that NMFS provide written concurrence with the plan and specify implementation and reporting requirements. NMFS' determination on the FMEPs depends upon the co-managers' intentions that all monitoring, evaluation, and reporting tasks or assignments included in the FMEPs to monitor tributary fisheries impacts on listed LCR salmon and steelhead shall be conducted as described in the FMEPs.

The WDFW and ODFW FMEPs detail the performance indicators for naturally produced salmon and steelhead that include fish population indicators and fishery indicators. The fish population indicators and the fishery indicators are described in the attached ERD documents. These will be monitored and evaluated on an annual basis. Reports will be provided to NMFS, and will include biological and fishery information from the previous year and an assessment of how the fisheries performed with respect to the objectives and guidelines established in the FMEPs. Annual reports will be submitted by March 31st of each year to:

Salmon Recovery Division, NMFS
525 NE Oregon Street, Suite 510
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In addition, comprehensive reviews of the FMEPs are scheduled to occur, at a minimum, every 5 years to evaluate whether the fisheries and natural populations are performing as expected. The comprehensive reviews will allow management assumptions to be further verified and allow new information or findings to be incorporated into the FMEP. This includes the determinations from formal recovery planning efforts and by the Technical Recovery Teams.

**SUMMARY**

The NMFS Northwest Region's SRD concludes that the FMEPs for the LCR salmon and steelhead ESUs provided by WDFW and ODFW adequately address all of the criteria for a FMEP under Limit 4 of the ESA 4(d) Rule and therefore, that fisheries implemented pursuant to these FMEPs would not appreciably reduce the likelihood of survival and recovery of the LCR chinook salmon, LCR steelhead and CR chum salmon ESUs. As described above, all of the necessary administrative and biological requirements have been met for NMFS' concurrence with the FMEPs. The FMEPs describe management actions that will provide for meaningful harvest opportunities within the context of rigorous protection of ESA-listed species in the Lower Columbia River area. The SRD recommends that fisheries described in the FMEPs be approved for take limitations under Limit 4 of the ESA 4(d) Rule, provided that they are implemented in accordance with their own implementation and reporting measures. The SRD recommends that you concur with the implementation of the FMEPs.

1. I concur with the WDFW's and ODFW's co-managers' implementation of fisheries described in the FMEPs, provided that they are implemented in accordance with their own implementation and reporting measures, as summarized above.

D. Robert Lohn
Regional Administrator

12/29/03
Date

2. I do not concur with the WDFW's and ODFW's implementation of the FMEPs.

D. Robert Lohn
Regional Administrator

Date

Attachment 1: Evaluation and Recommended Determination Document (WDFW LCR)
Attachment 2: Evaluation and Recommended Determination Document (ODFW LCR Chinook)
Attachment 3: Evaluation and Recommended Determination Document (ODFW LCR Steelhead)
Attachment 4: Evaluation and Recommended Determination Document (ODFW Hood River Steelhead)
Attachment 5: Evaluation and Recommended Determination Document (ODFW Chum)
Attachment 6: Section 7 Biological Opinion
Attachment 7: NEPA Finding of No Significant Impact and Environmental Assessment

Literature Cited:

ODFW (Oregon Department of Fish and Wildlife). 2000. Fisheries Management and Evaluation Plan. Hood River Basin Steelhead, Trout and Salmon Fisheries. Portland, Oregon.

ODFW. 2001a. Fisheries Management and Evaluation Plan. Lower Columbia River ESU Steelhead, Trout, Sturgeon and Warmwater Fisheries Lower Columbia River Mainstem Tributaries, Lower Willamette River Tributaries, Clackamas River and the Sandy River. Portland, Oregon.

ODFW. 2001b. Fisheries Management and Evaluation Plan. Lower Columbia River Chum Salmon in Oregon Freshwater Fisheries of the Lower Columbia River Mainstem and Tributaries Between the Pacific Ocean and Bonneville Dam. Submitted to NMFS, August 13, 2001. Portland, Oregon.

ODFW. 2003. Fisheries Management and Evaluation Plan. Lower Columbia River Chinook Salmon in Oregon Freshwater Fisheries of the Lower Columbia River Mainstem and Tributaries Between the Pacific Ocean and Hood River. Portland, Oregon.

WDFW (Washington Department of Fish and Wildlife). 2003. Lower Columbia River, Fisheries Management and Evaluation Plan.